

=====

Sequence Listing could not be accepted due to errors.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: Mon Jul 30 14:06:26 EDT 2007

=====

Reviewer Comments:

<150> US 60/134,870

<151> 1999 05 19

<150> US 60/133,296

<151> 1999 05 10

<150> US 60/103,514

<151> 1998 10 08

<150> US 60/094,291

<151> 1998 07 27

<150> PCT/USUS99/16596

<151> 1999 07 22

The above non-ASCII characters ("squares") between dates appear throughout the submitted sequence listing file; they also appear in <222> responses which indicate locations within the sequence. Please replace them with hyphens.

<400> 293

His His His His

1

69

Please remove the above "69" appearing at the end of the submitted file.

* * * * *

Application No: 09380447 Version No: 3.0

Input Set:**Output Set:**

Started: 2007-07-19 18:29:54.051
Finished: 2007-07-19 18:31:26.799
Elapsed: 0 hr(s) 1 min(s) 32 sec(s) 748 ms
Total Warnings: 284
Total Errors: 366
No. of SeqIDs Defined: 292
Actual SeqID Count: 293

Error code	Error Description
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <141>
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <151>
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <151>
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <151>
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <151>
E 287	Invalid WIPO ST.2 date format; Use (YYYY-MM-DD) in <151>
W 213	Artificial or Unknown found in <213> in SEQ ID (1)
E 341	'Xaa' position not defined SEQID (1) POS (12)
E 341	'Xaa' position not defined SEQID (1) POS (13)
E 341	'Xaa' position not defined SEQID (1) POS (14)
E 341	'Xaa' position not defined SEQID (1) POS (15)
E 341	'Xaa' position not defined SEQID (1) POS (16)
E 341	'Xaa' position not defined SEQID (1) POS (17)
E 341	'Xaa' position not defined SEQID (1) POS (18)
E 341	'Xaa' position not defined SEQID (1) POS (19)
E 341	'Xaa' position not defined SEQID (1) POS (20)
E 341	'Xaa' position not defined SEQID (1) POS (21)
E 341	'Xaa' position not defined SEQID (1) POS (22)
E 341	'Xaa' position not defined SEQID (1) POS (23)
E 341	'Xaa' position not defined SEQID (1) POS (24)

Input Set:

Output Set:

Started: 2007-07-19 18:29:54.051
Finished: 2007-07-19 18:31:26.799
Elapsed: 0 hr(s) 1 min(s) 32 sec(s) 748 ms
Total Warnings: 284
Total Errors: 366
No. of SeqIDs Defined: 292
Actual SeqID Count: 293

Error code	Error Description
E 341	'Xaa' position not defined SEQID (1) POS (25)
E 341	'Xaa' position not defined SEQID (1) POS (26)
E 341	'Xaa' position not defined SEQID (1) POS (27)
E 341	'Xaa' position not defined SEQID (1) POS (28)
E 341	'Xaa' position not defined SEQID (1) POS (29)
E 341	'Xaa' position not defined SEQID (1) POS (30)
E 257	Invalid sequence data feature in <221> in SEQ ID (2)
E 257	Invalid sequence data feature in <221> in SEQ ID (3)
E 257	Invalid sequence data feature in <221> in SEQ ID (4)
E 257	Invalid sequence data feature in <221> in SEQ ID (5)
E 257	Invalid sequence data feature in <221> in SEQ ID (6)
E 257	Invalid sequence data feature in <221> in SEQ ID (7)
E 257	Invalid sequence data feature in <221> in SEQ ID (8)
W 213	Artificial or Unknown found in <213> in SEQ ID (9)
W 213	Artificial or Unknown found in <213> in SEQ ID (10)
W 213	Artificial or Unknown found in <213> in SEQ ID (11)
W 213	Artificial or Unknown found in <213> in SEQ ID (12)
W 213	Artificial or Unknown found in <213> in SEQ ID (13)
W 213	Artificial or Unknown found in <213> in SEQ ID (14)
W 213	Artificial or Unknown found in <213> in SEQ ID (15)
W 213	Artificial or Unknown found in <213> in SEQ ID (16)
W 213	Artificial or Unknown found in <213> in SEQ ID (17)

Input Set:

Output Set:

Started: 2007-07-19 18:29:54.051
Finished: 2007-07-19 18:31:26.799
Elapsed: 0 hr(s) 1 min(s) 32 sec(s) 748 ms
Total Warnings: 284
Total Errors: 366
No. of SeqIDs Defined: 292
Actual SeqID Count: 293

Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (18)
W 213	Artificial or Unknown found in <213> in SEQ ID (19)
W 213	Artificial or Unknown found in <213> in SEQ ID (20)
W 213	Artificial or Unknown found in <213> in SEQ ID (21)
E 342	'n' position not defined found at POS: 20 SEQID(21)
E 342	'n' position not defined found at POS: 22 SEQID(21)
E 342	'n' position not defined found at POS: 26 SEQID(21)
E 342	'n' position not defined found at POS: 28 SEQID(21)
E 342	'n' position not defined found at POS: 31 SEQID(21)
E 342	'n' position not defined found at POS: 34 SEQID(21)
E 342	'n' position not defined found at POS: 38 SEQID(21)
E 342	'n' position not defined found at POS: 41 SEQID(21)
E 342	'n' position not defined found at POS: 44 SEQID(21)
E 342	'n' position not defined found at POS: 47 SEQID(21)
W 213	Artificial or Unknown found in <213> in SEQ ID (22)
E 342	'n' position not defined found at POS: 19 SEQID(22)
E 342	'n' position not defined found at POS: 22 SEQID(22)
E 342	'n' position not defined found at POS: 26 SEQID(22)
E 342	'n' position not defined found at POS: 28 SEQID(22)
E 342	'n' position not defined found at POS: 31 SEQID(22)
E 342	'n' position not defined found at POS: 35 SEQID(22)
E 342	'n' position not defined found at POS: 38 SEQID(22)

Input Set:

Output Set:

Started: 2007-07-19 18:29:54.051
Finished: 2007-07-19 18:31:26.799
Elapsed: 0 hr(s) 1 min(s) 32 sec(s) 748 ms
Total Warnings: 284
Total Errors: 366
No. of SeqIDs Defined: 292
Actual SeqID Count: 293

Error code	Error Description
E 342	'n' position not defined found at POS: 41 SEQID(22)
E 342	'n' position not defined found at POS: 44 SEQID(22)
E 342	'n' position not defined found at POS: 46 SEQID(22) This error has occurred more than 20 times, will not be displayed
W 213	Artificial or Unknown found in <213> in SEQ ID (23)
W 213	Artificial or Unknown found in <213> in SEQ ID (24)
W 213	Artificial or Unknown found in <213> in SEQ ID (25)
W 213	Artificial or Unknown found in <213> in SEQ ID (26)
W 213	Artificial or Unknown found in <213> in SEQ ID (27) This error has occurred more than 20 times, will not be displayed
E 257	Invalid sequence data feature in <221> in SEQ ID (36)
E 257	Invalid sequence data feature in <221> in SEQ ID (56)
E 355	Empty lines found between the amino acid numbering and the
E 321	No. of Bases conflict, this line has no nucleotides SEQID (293)
E 252	Calc# of Seq. differs from actual; 292 seqIds defined; count=293

Sequence Listing

<110> Sidhu, Sachdev S.
Weiss, Gregory A.
Wells, James A.

<120> TRANSFORMATION EFFICIENCY IN PHAGE DISPLAY THROUGH MODIFICATION OF A
COAT PROTEIN

<130> 11669.141USWO

<140> 09380447

<141> 1999-09-01

<150> US 09/380,447

<151> 1999 09 01

<150> US 60/134,870

<151> 1999 05 19

<150> US 60/133,296

<151> 1999 05 10

<150> US 60/103,514

<151> 1998 10 08

<150> US 60/094,291

<151> 1998 07 27

<150> PCT/USUS99/16596

<151> 1999 07 22

<160> 292

<210> 1

<211> 50

<212> PRT

<213> Artificial sequence

<220>

<223> Synthetic coat protein

<220>

<221> unsure

<222> 12 30

<223> unknown amino acid

<400> 1

Met	Ser	Lys	Ser	Thr	Phe	Lys	Lys	Phe	Leu	Lys	Xaa	Xaa	Xaa	Xaa
1				5					10					15

Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
				20					25					30

Glu	Thr	Ala	Ser	Ala	Gln	Leu	Ser	Asn	Phe	Ala	Ala	Lys	Ala	Pro
				35					40					45

Asp Asp Gly Glu Ala
50

<210> 2

<211> 50

<212> PRT

<213> M13 phage

<220>

<221> M13 phage

<222> 1 50

<223> coat protein VIII

<400> 2

Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln
1 5 10 15

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
20 25 30

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
35 40 45

Thr Ser Lys Ala Ser
50

<210> 3

<211> 50

<212> PRT

<213> f1 phage

<220>

<221> f1 phage

<222> 1 50

<223> coat protein VIII

<400> 3

Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asp Ser Leu Gln
1 5 10 15

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
20 25 30

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe
35 40 45

Thr Ser Lys Ala Ser
50

<210> 4

<211> 50

<212> PRT

<213> fd phage

<220>

<221> fd phage

<222> 1 50

<223> coat protein VIII

<400> 4

Ala	Glu	Gly	Asp	Asp	Pro	Ala	Lys	Ala	Ala	Phe	Asp	Ser	Leu	Gln
1				5					10				15	

Ala	Ser	Ala	Thr	Glu	Tyr	Ile	Gly	Tyr	Ala	Trp	Ala	Met	Val	Val
			20					25					30	

Val	Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe
			35					40					45	

Thr	Ser	Lys	Ala	Ser
			50	

<210> 5

<211> 50

<212> PRT

<213> Zj 2 phage

<220>

<221> Zj 2 phage

<222> 1 50

<223> coat protein VIII

<400> 5

Ala	Glu	Gly	Asp	Asp	Pro	Ala	Lys	Ala	Ala	Phe	Asp	Ser	Leu	Gln
1				5					10				15	

Ala	Ser	Ala	Thr	Glu	Tyr	Ile	Gly	Tyr	Ala	Trp	Ala	Met	Val	Val
			20					25					30	

Val	Ile	Val	Gly	Ala	Thr	Ile	Gly	Ile	Lys	Leu	Phe	Lys	Lys	Phe
			35					40					45	

Ala	Ser	Lys	Ala	Ser
			50	

<210> 6

<211> 50

<212> PRT

<213> Ifl phage

<220>

<221> Ifl phage

<222> 1 50

<223> coat protein VIII

<400> 6

Asp	Asp	Ala	Thr	Ser	Gln	Ala	Lys	Ala	Ala	Phe	Asp	Ser	Leu	Thr
1				5					10				15	

Ala	Gln	Ala	Thr	Glu	Met	Ser	Gly	Tyr	Ala	Trp	Ala	Leu	Val	Val
			20					25					30	

Leu Val Val Gly Ala Thr Val Gly Ile Lys Leu Phe Lys Lys Phe
35 40 45

Val Ser Arg Ala Ser
50

<210> 7
<211> 50
<212> PRT
<213> I2 2 phage

<220>
<221> I2 2 phage
<222> 1 50
<223> coat protein VIII

<400> 7
Ser Thr Ala Thr Ser Tyr Ala Thr Glu Ala Met Asn Ser Leu Lys
1 5 10 15

Thr Gln Ala Thr Asp Leu Ile Asp Gln Thr Trp Pro Val Val Thr
20 25 30

Ser Val Ala Val Ala Gly Leu Ala Ile Arg Leu Phe Lys Lys Phe
35 40 45

Ser Ser Lys Ala Val
50

<210> 8
<211> 50
<212> PRT
<213> Ike phage

<220>
<221> Ike phage
<222> 1 50
<223> coat protein VIII

<400> 8
Asn Ala Ala Thr Asn Tyr Ala Thr Glu Ala Met Asp Ser Leu Lys
1 5 10 15

Thr Gln Ala Ile Asp Leu Ile Ser Gln Thr Trp Pro Val Val Thr
20 25 30

Thr Val Val Val Ala Gly Leu Val Ile Arg Leu Phe Lys Lys Phe
35 40 45

Ser Ser Lys Ala Val
50

<210> 9
<211> 30
<212> DNA
<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 9

aaaagaattc ccgacaccat cgaatggtgc 30

<210> 10

<211> 35

<212> DNA

<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 10

accagatgca taagccgagg cggaacacat catcg 35

<210> 11

<211> 56

<212> DNA

<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 11

ttttctagac aggcctccca ccagatgcat aagccgaggc ggaaacatc 50

atcgtc 56

<210> 12

<211> 34

<212> DNA

<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 12

gctatcggaa tgcacgaggc atcacggca cctg 34

<210> 13

<211> 61

<212> DNA

<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 13

gagtcatagt cgtcaggcgc ctctccgga tcctccaccc accttggtga 50

aggtgtcgtg g 61

<210> 14

<211> 18
<212> DNA
<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 14
gggtatctag aggttgag 18

<210> 15
<211> 46
<212> DNA
<213> Artificial sequence

<220>

<223> oligonucleotide primer

<400> 15
tgagctccc ggatcctcca ccgctctgga agccacagct gccctc 46

<210> 16
<211> 42
<212> DNA
<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 16
ggatccggga gctccagctg atgaggtgac gatcccgcaa aa 42

<210> 17
<211> 42
<212> DNA
<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 17
gatcccgcaa aagcggcctg atgatccctg caagcctcag cg 42

<210> 18
<211> 42
<212> DNA
<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 18
caagcctcag cgaccgaatg atgaggttat gcgtgggcga tg 42

<210> 19
<211> 42

<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 19
cgctgggcga tgggtgtttg atgagtcggc gcaactatcg gt 42

<210> 20
<211> 42
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 20
gcaactatcg gtatcaagtg atgaaagaaa ttcacctcga aa 42

<210> 21
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<220>
<221> unsure
<222> 20, 22, 26, 28, 31, 34, 38, 41, 44, 47
<223> unknown base

<400> 21
ggatccggga gctccagcrn tnasrntnas nasnycrntn narntnrttt 50

taactccctg caagcc 66

<210> 22
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<220>
<221> unsure
<222> 19, 22, 26, 28, 31, 35, 38, 41, 44, 46
<223> unknown base

<400> 22
gatcccgcaa aageggccnw tnasrntnyt nasrntntr ntrntnasta 50

tatcggttat gcgtgg 66

<210> 23
<211> 70
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<220>
<221> unsure
<222> 19, 22, 25, 28, 31, 35, 38, 41, 44, 47
<223> unknown base

<400> 23
caagcctcag cgaccgaanw cnwenktnwc nyytnkgnyt nkgnwtntwg 50

tcattgtcgg cgcaactatc 70

<210> 24
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<220>
<221> unsure
<222> 19, 22, 25, 28, 31, 34, 37 38, 40 41, 43 44
<223> unknown base

<400> 24
gcgtgggcga tggttgttnw tnwenwtnt nytnytnntn ntnntaaget 50

gtttaagaaa ttcacc 66

<210> 25
<211> 72
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<220>
<221> unsure
<222> 19 20, 22 23, 31 32, 34 35, 37 38, 43 44, 46 47
<223> unknown base

<400> 25
gcaactatcg gtatcaagnn gnnsaagaaa nnsnngnnga aanngnngtg 50

ataaaccgat acaattaaag gc 72

<210> 26
<211> 66
<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 26

gatcccgcaa aagcggccta tgaggctctt gaggatattg ctactaacta 50

tatcgggttat gcgtgg 66

<210> 27

<211> 36

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 27

ccgacaccct ccaatgctga ggaaacacaa cagaaa 36

<210> 28

<211> 36

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 28

ttcaggaagg acatggctaa ggtcgagaca ttcttg 36

<210> 29

<211> 75

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 29

aactacgggc tgctcgcttg cttcaggaag gacatggaca aggtcgagac 50

attcctggct atcgtgcagt gccgc 75

<210> 30

<211> 57

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 30

ttcaggaagg acatggacgc tgtcgagaca ttctggcta tcgtccagtg 50

ccgctct 57

<210> 31

<211> 42

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 31

ggtaggaggat ccgggagctg atgagccgag ggtgacgatc cc 42

<210> 32

<211> 46

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 32

caccaaggtg gtctagagct aataataagc cgagggtgac gatccc 46

<210> 33

<211> 50

<212> PRT

<213> Artificial sequence

<220>

<223> P12 1 variant

<400> 33

Met	Ser	Lys	Ser	Thr	Phe	Lys	Lys	Phe	Leu	Lys	Val	Phe	Val	Phe
1				5					10					15

Ser	Val	Asp	Val	Asp	Asn	Asn	Trp	Ile	Trp	Ala	Val	Gly	Ile	Ile
				20					25					30

Tyr	Met	Leu	Leu	Val	Glu	Ala	Ser	Pro	Trp	Ala	Ala	Lys	Ala	Pro
				35					40					45

Asp	Asp	Gly	Glu	Ala
				50

<210> 34

<211> 93

<212> DNA

<213> Artificial sequence

<220>

<223> oligonucleotide linker library

<400> 34

gagggcagct gtggcttcgg tggcgggtvvc vvcvvcvvcv vcvvcvvcvv 50

cvvcvvcvvc vvcvvcvvcg gcgggtgccga gggtagcgat ccc 93

<210> 35
<211> 51
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide linker library

<400> 35

caccaagggtg gtctagagvv cvvcvvcvvc vvcgccgagg gtgacgatcc 50

c 51

<210> 36
<211> 67
<212> DNA
<213> Artificial sequence

<220>
<221> Artificial sequence
<222> 1 67
<223> oligonucleotide linker library

<400> 36
caccaagggtg gtctagagcv vcvcvvcvvc cvvcvvcvvc vvcvvcvvcg 50

ccgagggtga cgatccc 67

<210> 37
<211> 82
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide linker library

<400> 37
caccaagggtg gtctagagcv vcvcvvcvvc cvvcvvcvvc vvcvvcvvcv 50

vcvcvvcvvc cvvcgccgag ggtgacgatc cc 82

<210> 38
<211> 97
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide linker library

<400> 38
caccaagggtg gtctagagcv vcvcvvcvvc cvvcvvcvvc vvcvvcvvcv 50

vcvcvvcvvc cvvcvvcvvc vvcvvcvvcg ccgagggtga cgatccc 97

<210> 39

<211> 112
<212> DNA
<213> Artificial sequence

<220>
<223> oligonucleotide linker library

<400> 39
caccaagggtg gtctagagcv vcvcvcvcvv cvvcvcvcvc vcvcvcvcvv 50

vcvcvcvcvv cvvcvcvcvc vcvcvcvcvv vcvcvcvcvv cvvcgccgag 100

ggtgacgatc cc 112

<210> 40
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 40
aagttcgcta gagatgctta tgaggctctt gaggatattg ctactaacta 50

tateggttat gcgtgg 66

<210> 41
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 41
gaggatattg ctactaacct tttctttctc cttgggactg tgcattctgt 50

cattgtcggc gcaact 66

<210> 42
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 42
gcaaaagcgg cctataacgc tcttgaggat att 33

<210> 43
<211> 33
<212> DNA
<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 43

tatgaggctc ttgaggccat tgctactaac tat 33

<210> 44

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 44

gaggctcttg aggattcagc tactaactat atc 33

<210> 45

<211> 66

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 45

gatcccgcaa aagcggccta tgaggctctt gaggatattg ctactaacta 50

tatcgggttat gcgtgg 66

<210> 46

<211> 66

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 46

gagggcagct gtggcttcca gagcgggtgga ggatccggga gctccagcgc 50

cgagggtgac gatccc 66

<210> 47

<211> 60

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 47

cccgcaaaag cggcctttaa cgctctgcaa gccattgcga ccgaatatat 50

cggttatgcg 60

<210> 48

<211> 66

<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 48
caagcctcag cgaccgaact tttctttctc cttgggactg tgcattctgt 50

cattgtcggc gcaact 66

<210> 49
<211> 33

<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 49
tccgggagct ccagcgccaa gagtgagaag ttc 33

<210> 50
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 50
gggagctcca gcgatgagag tgagaagtgc gct 33

<210> 51
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 51
agctccagcg ataagggatga gaagttcgct aga 33

<210> 52
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 52
tccagcgata agagtgacaa gtccgctaga gat 33

<210> 53

<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 53
agcgataaga gtgaggattt cgctagagat gct 33

<210> 54
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 54
gataagagtg agaagccgc tagagatgct ttt 33

<210> 55
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 55
agtgagaagt tcgctaaaga tgcttttaac tcc 33

<210> 56
<211> 33
<212> DNA
<213> Artifical sequence

<220>
<221> Artificial sequence
<222> 1 33
<223> mutagenic oligonucleotide

<400> 56
gagaagttcg ctagagcggc ttttaactcc ctg 33

<210> 57
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 57
cccgcaaaaag cggcctttga ggctcttgag gat 33

<210> 58

<211> 34
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 58
gcaaaaagcgg cctataaacg ctcttgagga tatt 34

<210> 59
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 59
aaagcggcct atgagtcct tgaggatatt gct 33

<210> 60
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 60
gcctatgagg ctcttcaaga tattgctact aac 33

<210> 61
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 61
tatgaggctc ttgaggccat tgctactaac tat 33

<210> 62
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 62
gaggctcttg aggattcagc tactaactat atc 33

<210> 63
<211> 33

<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 63
gaggatattg ctactgaata tatcggttat gcg 33

<210> 64
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 64
gcctcagcga ccgaatatct cttctcctt ggg 33

<210> 65
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 65
tcagcgaccg aacttatctt tctccttggg act 33

<210> 66
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 66
gcgaccgaac ttttcggtct ccttgggact gtg 33

<210> 67
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> mutagenic oligonucleotide

<400> 67
accgaacttt tcttttatct tgggactgtg cat 33

<210> 68
<211> 33
<212> DNA
<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 68

gaacttttct ttctcgcggg gactgtgcat ctt 33

<210> 69

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 69

cttttctttc tcctttggac tgtgcatctt gtc 33

<210> 70

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 70

ttctttctcc ttggggcggt gcatcttgtc att 33

<210> 71

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 71

tttctccttg ggactatgca tcttgtcatt gtc 33

<210> 72

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 72

ctccttggga ctgtggttct tgtcattgtc ggc 33

<210> 73

<211> 33

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 73

cttgggactg tgcattgtgt cattgtcggc gca 33

<210> 74

<211> 36

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 74

gcaaaagcgg cctataactc ccttgaggat attgct 36

<210> 75

<211> 48

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 75

gcaaaagcgg cctataacgc tcttgaggat tcagctacta actatata 48

<210> 76

<211> 60

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 76

cccgcaaaag cggcctatga gtcccttgag gattcagcta ctaactatat 50

cggttatgcg 60

<210> 77

<211> 48

<212> DNA

<213> Artificial sequence

<220>

<223> mutagenic oligonucleotide

<400> 77

gcaaaagcgg cctataactc ccttgaggat tcagctacta actatata 48

<210> 78

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> peptide linker

<40